

A METHOD AND SYSTEM FOR ONE-CLICK NAVIGATION AND BROWSING  
OF ELECTRONIC MEDIA AND THEIR CATEGORY STRUCTURE AS WELL  
AS TRACKING THE NAVIGATION AND BROWSING THEREOF

PRIORITY NOTICE

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BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to methods and apparatus for navigating electronic media. The present invention allows the browser to browse through the nested categorization structure before committing to invoke a link to call for particular content pages listed under a particular category. In the prior art, only one level of categories can be view in one category listing webpage. The next level categories under any particular category at that level is accessed, by invoking the link-token of the category by clicking on the category title, and download the next page where the next level

category titles are listed. This results in loading many intermediary pages, going back and forth to search for the interested category and the related content.

The present invention also relates to a dynamic tracking-string/tracking-device that embeds the category browsing apparatus. Thus allowing browsers to dynamically examine and pursue other browsing paths, and to arrive at new destination content with a single mouse click and a single page-download. The present invention enables the browser to return to, or arrive at any page at any previous, or forward branching point at any categorical level, from any page at any level of the categorization structure.

#### Description of Related Art

The application of hyper text mark up language (HTML), scripting languages, such as Java, Common Gateway Interface (CGI), Practical Extraction and Report Language (PERL), Visual Basic Script Language, VB (Visual Basic) Script, and derivatives thereof, other languages, markup languages, or meta-languages, such as the Standard Generalized Markup Language (SGML -ISO 8879), eXtensible Markup Language (XML), Cascading Style Sheet (CSS), and Java Speech Markup Language (JSML), allows the static and dynamic linking of computer stored objects (texts, graphics, icons, parts, items, lists, audio and video segments, etc.) from a container of objects to related information and/or other objects and containers via software link-tokens. A link-token is an addressing pointer, pointing to the memory location of the link destination). A link-token is usually represented by an underline, bolded text-string or a symbol, a bullet, an icon, a graphical thumbnail, a graphical text-string or a

symbol etc., and can only be invoked one at a time from each electronic media "page." An electronic media "page" has a single and unique URL (Universal Resource Locator) address. It can physically be less, equal to, or more than one or many conventional 8 1/2" by 11" printed paper page.

When a link-token associated with a particular object is selected and invoked, for example, by clicking a computer "mouse" button while the pointer is resting at the object, the destination object that is linked by this particular link-token is brought forth from the database or memory bank in the connected storage media addressed by the link-token, and presented for viewing or examination by browsers, i.e., humans, devices, or computer software.

However, on each predefined page of such electronic media where many objects and link-tokens are present, only one link-token can be invoked (clicked) at a time from one web-page to bring forth the particular web-page addressed by the particular link-token invoked. If additional objects from the starting page are of interest, one must return to that page, with as many click-and-wait's on the "back" button, as the browser has already clicked forward on the current path. Once back there, only one single selection of links can be made and "clicked" to bring forth the next level content page linked. Moving forward and backward between pages of media linked by the link-tokens in this manner is a slow and labor-intensive procedure.

The viewing and examination of such electronic media is organized by categories. Only the top-level categories and at some instances, some of the associated

second level categories are listed on the first actionable starting page, the home-page. From any page that lists multiple category titles for selection, only one category title can be selected, and only one action can be made: to bring forth the one page that particular category title points to, usually the next level categories listed under that particular category title.

The information the browser actually desires to view is often several levels away. The browser thus make one click on one category at a time, loading one page listing the next level of category titles, and repeating the process until the desired category is finally reached to be clicked and linked to the content page. The trade-off that can be made is between the number of categories listed at the same level, versus how many levels of categorization.

The prior art lists the first level of categories on the home-page, and the next level categories under each first level category on their respective subsequent linked page. The third level categories under each 2<sup>nd</sup>-level categories are listed in the respective subsequent third level page, and so forth. A browser must follow a certain category path by common sense over several click-and-wait path. If the path yields no desirable result for information sought, or if the browser wishes to examine another category branch several links and levels back, the browser must return to that branching level, repeat the process until the interested information is located and reached.

To track the browsing path and facilitate returning to the previous pages along

the browsing path, the prior art lists in a string the URL link titles along the browsing path, and requires the browser to click and download a web page along the path to view a sub-category listing under that particular category along the current browsing path. To examine the sub-categories under another category at that same level, the browser must find, select and click that category, and download a web-page that lists its sub-categories, and so forth. Examining many categories at the same level and branching to other paths with the prior art would require clicking forward and backward nymerous times, and each time waiting for a page to download.

The state-of-the art of category-assisted browsing and the tracking scheme from the most advanced sites are illustrated in Figure 1 through Figure 5. While these various category assisted browsing schemes are superior than most other smaller or lesser sites in that they all attempt to reduce the number of total levels the viewers/browsers much click-through and download to reach the intended content, they all trade off between having a larger number of categories at each level to reduce the number of levels a browser must click through. Each of these schemes also in someway presents a select partial listing of the next level categories under each current level category. As shown in Figures 1B1 through 1B6, ebaY.Com combines the 2<sup>nd</sup> and the 3<sup>rd</sup> levels immediately after a primary category on the home-page is clicked. As shown in Figure 2A, Yahoo lists the primary (1<sup>st</sup>) level categories arrayed across the home-page, and a small number of selected 2<sup>nd</sup> level . categories listed under each primary level category. As shown on the left side of Figure 3A, Homeportfolio, a state-

of-the-art site showcasing high-end home furnishing products uses a combination of minimizing the number of levels (by increasing the number of categories in each level), as well as giving an option for “category search,” where the entire unstructured category titles can be linearly alphabetically scrolled through a small viewing box. As shown in Figure 4A, AOL.com lists 1<sup>st</sup> and 2<sup>nd</sup> level categories on the home-page, with a small number of first level categories, and a large number of 2<sup>nd</sup> level categories in a column-format. As shown in Figure 5B, Spiegel, a department store web-site, lists the primary “shopping” categories on the left most column of its shopping page. As shown in Figure 5C, the 2<sup>nd</sup> level category titles of a particular primary category title would appear under the category when it is selected and clicked. The remaining primary level category titles is pushed lower on the column. The detailed mechanisms of these schemes are described in the following sections.

ebaY.Com’s category browsing is illustrated in Figures 1A through 1D. The home-page is shown in Figure 1A, with primary (first level) categories listed on the left side of the page. As an example, we selected the “Collectibles” category, by using the mouse to move the cursor to rest at that text-string. The only thing one can do after that is to click the left mouse button to commit to the selection, which brings forth Figure 1B1 through 1B6, a 6 physical-page length listing of the next two levels of categories under “Collectibles.” The list is alphabetically arranged, first column on the left downward from “A” on Figure 1B1 to “H” on Figure 1B5 (Figure 1B6 contains a few ebaY.Com functional buttons). The second column begins with “H” on Figure 1B1 to

“M-Miscellaneous” (which contains 4,000 items within that category) on Figure 1B5. The list is very large and requires considerable effort to view or to comprehend. However, the number of levels is minimized, so that it does not become too annoying to the browser to have to click and download too many times to reach the desired category. The gain is obtained at the cost of cramming an incomprehensibly large number of category titles at each level, and an even larger number of content items under each category title. As an example, we click on the 3<sup>rd</sup> level “Golden Age” category under the second level “Comic Books” category on Figure 1B4. The download result is shown on Figure 1C, which contains the next level (4<sup>th</sup>) categories: “General,” “Superhero,” “Crime,” “Horror/Sci-Fi,” and “Funny Animals;” a list of 8 “featured items,” and a long list of 2620 Golden Age Comic Books, which takes more than 52 web-pages (as indicated on Figure 1C) to display – we printed only the first physical page of the first web-page that contains 3 physical pages – as noted on the lower left corner of Figure 1C.

ebaY.com’s “tracking-string/tracking-device” is shown at around one quarter down from the top of this first physical page of the first web-page from the more than 52 consecutive web-pages listing the items under the “Golden Age” sub-category of the “Comic Books” category. The tracking-string/tracking-device is as the following: “Top : Collectibles : Comic Books : Golden Age,” with “Current Auction” under the string. The “Top” contains a link to return to the home-page. The “Collectibles” contains the link to return to the “Collectibles” page, Figures 1B1 through 1B6. The “Comic Books”

contains the link to return to the Comic Books page. The “Golden Age” is the current page, thus unlinked.

We then click the “General” category on this page (listings under the Golden Age category), and parsed the 2626 item list down to a 1360 item list that still will take more than 28 web-pages to display as shown on Figure 1D1.. We print only the first 2 physical pages shown in Figure 1D1 and 1D2 of the first “web-page” that contains 3 physical pages.

Yahoo.com’s category browsing scheme is illustrated in Figures 2A through 2E. The primary (first) level categories and a few selected 2<sup>nd</sup> level and occasionally 3<sup>rd</sup> level categories under each primary category are shown on the homepage in Figure 2A. For example, under “Business & Economy” category, three sub-categories: Companies (2<sup>nd</sup> level), Finance (2<sup>nd</sup> level), and Jobs (3<sup>rd</sup> level) are listed. By clicking on “Business & Economy” category, one brings the link-destination page shown in Figure 2B, with 36 second-level category titles listed under “Business & Economy.” Clicking on the “Employment & Work” (2<sup>nd</sup> level) sub-category, the destination page shown in Figure 2C is brought forth, listing 28 third level categories. Clicking on the “Jobs,” 3<sup>rd</sup> level category on Figure 2C brings the link-destination page Figures 2D1 through 2D6, listing the 6 sub-categories (4<sup>th</sup> level) as shown in Figure 2D1, and Internet job sites in 2D1 through 2D6. Clicking on the “Company Job Listings” brings Figures 2E1 through 2E7, listing 358 links to company job sites in alphabetical order. The “tracking-string/tracking-device” is presented only on the very top of the 1<sup>st</sup> physical page

(Figure 2E1) of this very long web-page. The tracking-string/tracking-device reads: "Home > Business and Economy > Employment and Work > Jobs." The 2<sup>nd</sup> line of the tracking-string/tracking-device indicates the current page category title: "Company Job Listings." A browser can click on the "Employment and Work" link on the tracking-string/tracking-device to return to that category page, and select another sub-category, for example, the "Career Fields," by placing the mouse on "Career Fields," and click the mouse button. Figure 2F would be brought forth from the remote site-server to show an alphabetically ordered list of career fields. Clicking on "Financial Service" in Figure 2F downloads Figure 2G, listing the next 5 sub-categories. Clicking on "Individual Resumes" in Figure 2G downloads a three-physical-page web-page showing 79 names of individuals who post their resumes under the "Financial Services" category, and the links to the resumes. Figure 2H shows the first physical-page of this web-page.

Shopping.Yahoo.Com is shown in Figure 2I, where a "Kitchen Appliances" category is reached after 4 clicks and 4 page-downloads, showing the 29 fifth level categories. There are yet at least two more clicks and two more page-downloads to reach specific information of a desired item.

The Homeportfolio.com's category browsing is illustrated in Figures 3A through 3H. The shortened "quick start" category list is given on the mid-left section of the home-page as shown in Figure 3A. An unstructured category list is accessible via the small "category search" box located at the end of the content on the left side of the home-page. When the downward triangle on the right side of the small box is clicked, a

somewhat longer box with a scroll bar appears, with an alphabetical listing of category titles. Scrolling the scroll bar causes the long category list of 158 titles as shown on Figure 3B to slide by the “box” for viewing. When the correct category is found, a click on the category would bring the web-page containing the items listed under that particular category onto the display screen from the remote site-server. The Homeportfolio method enables the browser to pick an exact category from the start, so that a page containing the items under that category can be reached without many steps of downloading category-listing pages. However, to examine the unstructured list of 158 category titles by scrolling the list through a small window, can not be said to be less annoying than having to download several hierarchical category-listing pages, one-level at-a-time. To illustrate the hierarchical category browsing, we click the mouse button when the cursor is rested on the “Furniture and Home Furnishing” category as shown in Figure 3A. A “product explorer” web-page as shown in Figure 3C is downloaded from the Homeportfolio remote site-server, containing two types of category titles. Moving the cursor to the “Living & Family Room” category shown in Figure 3C and clicking on the mouse-button downloads a page listing the eight 2<sup>nd</sup> level category titles as shown in Figure 3D. Clicking on the “Furniture” category title on this page causes Figure 3E to be downloaded, listing the 14 sub-categories under “Furniture.”. Clicking on the “Coffee Table” category on this page brings Figure 3F, a list of the number of Coffee Tables present on the site from each manufacturer. Figure 3G1 and 3G2 shows the first two pages of the 4 pages of the 96 item Coffee Table

thumbnail list. The enlarged graphics and detail descriptions are viewed one at a time. Graphical thumbnails like those in Figure 3G are small images frequently use in on-line or other computer viewable recording media (such as CDROM) to represent objects that are best represented by images. The thumbnail and the underlined text-title represent the same link that links the thumbnail and the text title to the larger graphics and the more detailed descriptions of the item, as shown in Figure 3H.

America On Line, AOL.Com's category assisted navigation is shown in Figures 4A through 4K. The AOL home-page shown in Figure 4A has four primary categories: Web Centers, Shortcuts, Shopping, and Community. The next level categories are accessible and organized under these primary categories in four columns. Each of the primary categories also has a link token that links to a page listing the 2<sup>nd</sup>-level sub-categories shown in the home page, along with some other advertising and promotional information shown in Figure 4B1. Clicking on any of the categories listed in the "SHOP BY CATEGORY" section, download a page listing logos and banners with links to the on-line stores linked to AOL under that category and a repeat of the "SHOP BY CATEGORY" section shown in Figure 4B2.

To illustrate AOL's process, we move the cursor to "Apparel," and click on the left button of the mouse. The action brings a page as shown in Figure 4C, containing banners of various AOL linked on-line stores selling apparel products. Each banner has a link-token linking to the store's independent web-site off the AOL.Com site. Using the mouse to slide the cursor to the "Harold's" banner, and clicking on the left button of

the mouse, causes Figure 4D to be downloaded to the browser screen from the "Harolds.Com" site-server. Harold's categorization scheme takes over from that point. To find clothes to buy, one needs to click on the "shop now" link, the second active graphical text-string from the left. Figure 4E is downloaded to the browser's computer from the site-server, and the Harold's shopping categories are shown. If the shopper is looking for men's clothes, move the cursor to "MEN'S" category, and click the mouse button. Figure 4F is downloaded from Harold's site-server. If "Sportcoats" is of interest, bring the cursor there, and click the mouse button, Figure 4G shows up with thumbnails of three selections. To see any one of the three selections, one must move the cursor and click the mouse button again, on one, and only one of the three selections. If the cursor is moved to the black sports coat show on the top, and the mouse button clicked, a web page as shown in Figure 4H is downloaded to the screen from the site-server. If the shopper wants to see another one of the three selections, the cursor must be moved to the "Back" icon on the browser frame, and the mouse button clicked to bring back the page with the three selections shown in Figure 4G and the process repeated.

If the shopper decides that none of the three sports coats catches his fancy, and wishes to see some other stores, the best thing for him to do is to enter [www.aol.com](http://www.aol.com) into the “Go to” box on the browser frame at the top of the screen, to return to the AOL home-page (Figure 4I1 and 4I2). It would require too many clicking on the “Back” icon, and much waiting between each click for the downloading of the intermediary pages, to

return to the "Apparel" page (Figure 4C). To explore the AOL process further, let us move the cursor to "Auctions" or "Department Stores" under "Shopping." A web-page shown in Figure 4J or 4K is downloaded from the AOL site-server, with banners of various on-line auction or department store sites, and the "SHOP BY CATEGORY" section on the lower half of the page listing the primary shopping categories. Each banner represents a shopping site linked to, but off the AOL site. When a banner is clicked, the browser exits AOL site and begins downloading the home-page of the particular site the clicked-banner is linked. The category structure is that of the banner site, independent of AOL, as shown earlier from Figures 4D through 4H of Harolds.com store and Figures 5A through 5K of the Spiegel.com store.

Spiegel.com shown in Figure 5A, a well acknowledged on-line department store listed in AOL Shopping's "Department Stores" category, uses only two category-levels for its on-line shopping functions. The left column shown in Figure 5B of the web pages is used as a partition to list its first level categories and the 2<sup>nd</sup> level categories of a selected first category. The second level category under a specific category appears, when that specific category is "clicked." As shown in Figure 5C. If another 1<sup>st</sup> level category is subsequently clicked, the first set of second level categories disappears, and the new set appears under the subsequently clicked category (see Figures 5C, 5D). The number of each set of the 2<sup>nd</sup> level categories is large as shown in Figures 5C, 5D, 5H, 5I, but not as large as that of some of the ebaY.com's categories. There is no third level category under the 2<sup>nd</sup> level categories. For example, When the "Accessories" (or "Fine

Jewelry") category is clicked, the web-page containing all merchandise categorized under "Accessories" or ("Fine Jewelry) shown in Figures 5E, 5F is downloaded. Clicking on a thumbnail downloads the larger picture and detailed description of the item. This scheme functions reasonably well when the number of items under each 2<sup>nd</sup> level category is not large, as shown in Figure 5. Ideally, in a fully functioning on-line department store, there should be hundreds or thousands of items in the "Accessories" category, making sub-categorization under "Accessories" a necessity. In such situation, the Spiegel scheme is not usable. As the site is further reviewed, it is found that there are invariably very few items under each second level category shown in Figures 5E, 5F, 5H, 5I, 5K.

#### SUMMARY OF THE INVENTION

The present invention is related to an intelligent, convenient and time-saving method and apparatus to browse electronic media by clicking only once from a nested cascading category structure, without repeated, unwanted and unneeded intermediary downloads for category listing pages, as required in the prior art. The present invention also relates to easy pre-browsing of the category structure, rolling from category to category to view each category's sub-categories, and back and forth from level to level without having to click any one category and download its next-level category listing pages. With the present invention, the viewer/browser clicks only once to download precisely the content page of interest after at any point during the

examination of the category structure and category titles, at any hierarchical level of the category structure.

The present invention also relates to a dynamic tracking device, which can be represented by a text-string or a string of graphical symbols, with an embedded nested/cascading/roll-over category browsing apparatus of this invention, to facilitate an efficient way to return, move, forward, and/or change path during browsing and examination of electronic media, or to easily review more than one path along the categorical structure. The invented method and apparatus advances the state of the art, and significantly improves the method and processes of exploring, viewing, and examining electronically recorded media.

The prior art on the other hand requires the browser to click and download a new web page to view a sub-category listing under a particular category along the current browsing path at a certain hierarchical level. To examine the sub-categories under another category of the same level, or at a different level, to consider browsing a different path, the browser must select, click, and download back and forth numerous times to see each level of subcategory listing under each category. Examining many categories at the same level or at different levels using the prior art would require innumerable clicking forward, backward, and download waiting cycles, costing time, labor, and computing and data transmission resources.

## BRIEF DESCRIPTION OF THE DRAWINGS

Figures 1A through 1D2 describe ebaY.Com category assisted browsing scheme.

Figures 2A through 2I describe Yahoo.Com category assisted browsing scheme.

Figures 3A through 3H describe Homeportfolio.Com category assisted browsing scheme.

Figures 4A through 4K describe AOL.Com category assisted browsing scheme.

Figures 5A through 5K describe Spiegel.Com category assisted browsing scheme.

Figures 6A through 6E illustrate the dynamic one-click nested cascading category browsing method and apparatus of the present invention.

Figures 7A through 7G illustrate the dynamic tracking-string/tracking-device with embedded nested-cascading category browsing apparatus of the present invention.

Figure 8A through 8E illustrate another implementation of dynamic one-click nested cascading category browsing method and apparatus of the present invention.  
(Will send it to you when we have enough time. Otherwise it is not important)

## DETAILED DESCRIPTION OF THE EMBODIMENT OF THE INVENTION

Described is a method and apparatus for browsing the category structure of a web site independently of the media pages thereby bypassing the repeated, time-consuming page downloading for viewing sub-category titles required in the prior art. Also described is a method and apparatus to assist browsers to easily explore different categories and browsing paths along category trees, without the time consuming,

repeated page downloading and “clicking back and forth among web pages of different categories, and between different levels of categories on the category tree as required in the prior art.

The invention enables content provider to organize the electronic media under meaningful and sensibly sized partitions and levels, nested and cascading category titles. The invention further maintains the categorization titles and structure in textual format, and as a complete entity of its own, with or without parsing portions of the category structure to embed into various content pages. In the present invention, categorization structure is organized according to user friendliness, without need to include a very large number of categories in one level, in order to reduce the number of levels in the category structure, to reduce the number of click-and-wait cycle, as required in the prior art. The categorization titles and structure of the current invention is organized, stored, and presented economically and efficiently. The titles and their structural relations can be delivered to any or all content pages, but separate from the rest of the media content present on the pages.

The category structure of the present invention, although resides with the web-pages, does not need to be displayed on the computer viewing screen with the rest of the page content, until specifically called for. The category structure can be browsed and examined in detail, independent of the web-page content. No web page downloading is required until the browser is satisfied with the browsing and examination of the category structure and titles, and has determined a specific category

of interest. Only then, the link-token associated with this specific, selected category title need be invoked to initiate the downloading of the content that is specifically related to this particularly selected category. When the cursor is moved away from the category structure, the structure disappears, again hidden from view without disrupting the display and viewing of the rest of the media content on the page.

Figure 6 shows an example implementation of the present invention, the "One Click" category browsing.. Figure 6A shows an example home-page, with a text-string or a symbol representing the gateway to viewing the category structure, in our example, --"Category Listings" at the upper left of the page content is used as such symbol. When the cursor is moved, or "rolled-over" to that "Category Listing", without having to click the mouse button, the primary category titles appear under "Category Listing", as shown in Figure 6B. If the browser moves (or rolls-down) the cursor to any one of these primary category titles, for example, to "BonneVie@Home" as the selected category, the category titles under "BonneVie@Home" appear to the right of the primary category titles, without clicking action or any downloading from the site-server, and "BonneVie@Home" is highlighted as shown in Figure 6C. When the cursor is "rolled-over" to one of these 2<sup>nd</sup> level categories, for example, "Outdoor Living," the "Outdoor Living" becomes highlighted, and another list appears to the right of the 2<sup>nd</sup> level category list to show the 3<sup>rd</sup> level category titles under the "Outdoor Living" category as shown in Figure 6D, again without clicking or downloading from the site-server. Figure 6E shows another level of "rolling-over" the

cursor to the "Furnishing" sub-category organized under the "Outdoor Living" category. The "Furnishing" category title becomes highlighted, and the next level category titles appears. Thus progressing, until the desired level, or the last level of categorization is reached. Furthermore, if the browser wishes to examine different browsing paths before committing to "clicking" for the content, all is needed is to move the cursor to other categories either at the same level or any other level. As the cursor is moved to a different category at the same or different levels, the list of the subcategories of the previous category disappears, the category title itself is "un-highlighted," and the next category where the cursor is presently rested becomes highlighted, and its next-level categories appears. The "rolling" over or forward of the cursor causes the next-level category titles to appear, and the "rolling" backward causes the current level and next levels of category titles to appear. Moving the cursor away from the category structure, the entire structure disappears except for the text-string or the symbol "Category Listing"—representing the gateway key to viewing and browsing the category structure.

Without the interference of having to "click and download" at each category and each level to see the next level categories, using the present invention, the organization of the media content can be optimized for user friendliness, rather than for accommodating a tolerable number of "click-and-wait" cycles as in the prior art. There is no longer reason to include a very large number of items under a category title; or to include a very large number of category titles within a category level, in order to

minimize the number of category levels.

At any level or any branching point, the browser can elect to click on the mouse button on a category title to download the entire content pages associated with that category. For example, if the "Furnishing" title is clicked, all outdoor furnishing would be listed and/or described on the page downloaded from the server. If the Vinyl Furniture is selected and "clicked," only Vinyl outdoor furniture will be contained in the page downloaded from the server. If the cursor is moved from "Furnishing" to "Grills," the "Furnishing" sub-category box would disappear, and the sub-categories for "Grills" would appear in the new box in its place. The category title "Grills" becomes highlighted, and "Furnishing" un-highlighted. If the cursor is moved back to "Home Office" of the 2<sup>nd</sup> level category box, the last two levels of lists shown in Figure 6E would disappear, and a new list would appear to list the sub-category titles under the "Home Office" category, with the "Home Office" highlighted. When the interested/desired category is reached at any level, a mouse click with the cursor resting on that particular category will download from the site-server the web content linked to the link-token of that particular category.

With the present invention the browsing and examination of the categorization structure is facilitated in the most logical and convenient fashion, allowing the browser to roll-over up or down within the same level, or back and forth, between the nesting/cascading levels, until the browser is certain of which category title best fits the information he or she is searching, without having to download intermediary web-

pages, level-by-level, and category-by-category, just to view the titles of the next level categories, as is necessary with the prior art. With the present invention, the structuring and the categorization of electronic media can now be optimized for the ease of locating information.

As illustrated in Figure 1 through Figure 5, the prior art seeks to minimize the number of levels of categorization, and/or maximize the number of categories listed on one single web page. This is done in order to minimize the number of categorical levels and the associated annoyance of many downloading steps and the waiting periods, as dictated by the prior art. The prior art parses the categorization structure, and embed lower level category titles with the follow-on media content page of the prior level category, displaying both the category titles and the associated or unassociated page content. In so doing, a lower level category can only be reached by clicking the link-token of its parent category, and downloading the follow-on page containing the titles of the sub-categories along with other content of the page. Often, the category titles take up the majority space of the viewable area of the page.

Figures 7A through 7G illustrate an exemplary embodiment of the "dynamic" tracking-string/tracking-device" feature of the present invention. Near the top of the page shown in Figure 7A, is a string of textual titles or a string of symbols indicating the categorical hierarchy of the current web-page, starting with either the home-page, or the first level category, and ending at the current page category title. Several advanced web sites contain this facility as shown in Figure 1 through Figure 4. The

present invention differs from, and advances the state-of-the-art, in that the tracking-string/tracking-device is embedded with a hidden dynamic category browsing apparatus of this invention, as described in detail in Figure 6, while the prior art tracking scheme is either inactive, or linked only specifically to the pages linked to each category title along the hierarchical category title chain represented by the text-string

In Figure 7A, the “Art & Antiques” is the primary (1<sup>st</sup> )level category of the current browsing path, and the page shown is at the Art’s branch of that category. The tracking-string/tracking-device above the graphics states: “Art & Antiques | Arts”. When the cursor is moved to directly on top of the “Arts” in the tracking-string/tracking-device, the two same-level categories “pop-up” in under “Arts” as shown in Figure 7B. A Browser can pursue the “Antiques” path and forward, without “clicking” back to the “Art & Antiques” level. When the cursor is placed on top of the “Art & Antiques” in the tracking-string/tracking-device, the same-level categories, in this case, the primary level categories “pop-up” underneath the string as shown in Figure 7C. The browser can explore other primary category paths while staying on this very page as shown in Figure 6. For example, if the cursor is moved to the “Art & Antiques” category title, the title becomes highlighted, and its next category titles pop-up next to the primary category, as shown in Figure 7D. If the cursor is rolled down to BonneVie@Home, the “Arts, Antiques”’s next-level category titles disappear, and the next-level category titles for BonneVie@Home pop-up next to BonnVie@Home,, and BonneVie@Home is highlighted. The apparatus to explore the category structure

resides on this very page (and every page, if so desired), with no clicking of the mouse button and no page-downloading required, until the browser identifies the exact level and the exact category of interest. Figures 7D, 7E, 7F, and 7G show the “rolling” of the cursor from the primary level category BonneVie@Home to one of its 2<sup>nd</sup> level category title “Outdoor Living,” to one of the 3<sup>rd</sup> level category title, “Furnishing.” At any stage during the exploration of category structure and titles, any category at any level can be selected and “clicked” to download the content pages linked to the category title. At any stage during the exploration of category structure and titles, rolling the cursor backward causes the higher (latter) level category title lists to disappear from view. Moving the cursor away from the tracking device area, all category listing disappear.

The dynamic tracking-string/tracking-device with embedded category browsing/exploration apparatus allows browsers to return to, or forward to any category level to seek a different browsing path from any page, using one single mouse-click and one page download to reach the new destination information of interest.

Figure 8A shows a variation of the embodiment of the “one click” browsing feature of the present invention where the next-level category listing is shown along side the previous level at even level at the top. The notation for which category’s next-level is show, is indicated in a change of the background color for that category title.

One can also implement that a single click on a category title prompts the display of its next-level category listing. A single click on another category title “turns off” the old list, and prompts the display of the next-level category listing for this newly

“clicked” category. In such implementation, a “double-click” is used to call for the downloading of the URL page linked by the particular link-token to the “double-clicked” category title.

Figure 8B illustrates one embodiment of the tracking device of the present invention. The text-string (the tracking-string) at the top of the page indicates the particular sequence of category browsing path of the current page displayed on the screen. Normally, there is no drop-down menu shown on the screen to interfere with the display of the current page. When the browser brings the cursor to any of the category title along the browsing path indicated by the tracking-string, a drop-down menu would appear to show the parallel category titles to that category. It can also be implemented that the drop-down menu appears only with the prompting of a single click (prompting-click) on that category title on the tracking string, and stays on until after another prompting-click on the same category title is performed. At which time, the drop-down menu disappears. Note that the prompting-clicks are only used to turn the drop-down menu “on” and “off”, but not to download anything from the remote storage device. To call for the download of an URL page from within the browsing and tracking device of the present invention in this implementation, a “double-clicking” is used.

When the cursor is moved to any other category title along the tracking-string, in the “no click” implementation, the first drop-down menu under the category title where the cursor was placed previously would disappear, and the new drop-down menu

showing parallel category titles to the category the cursor is presently pointing. When the cursor is rolled down along the drop-down menu to a different category title, and resting on one particular category title, its next-level category title listing appears to the left of the particular category title the cursor is resting to pointing on, as described in “One Click Category Browsing” device in Figure 8B.

When the cursor is moved to any other category title along the tracking-string, in the “prompting-click” implementation, the first drop-down menu under the category title where the cursor was placed previously would stay on, and the new drop-down menu showing parallel category titles to the new category the cursor is presently pointing to would appear if the browser “clicks” on this present category. One can move from category title to another along the tracking-string, in no particular sequence, to “click” once to see the parallel category titles listed, and another “click” to turn off the list—make it disappear from the screen. When the cursor is rolled down along the drop-down menu to a different category title, and rests on one particular category title, its next-level category title list appears to the left of the particular category title the cursor is presently resting on, as illustrated in “One Click Category Browsing” device in Figure 8B. The drop-down menu for the next-level tracking-string category currently indicated can be programmed to disappear to avoid confusion, or can stay on in the background, if the new “pop-up” menu for the other now indicated category overlaps a part of the tracking-string drop-down menu. The branching into a different category

browsing path from the current page, can be indicated with a different background color, if so desired.

The present invention is implemented using software which can be written in many programming languages, or implemented with many web-page generation tools. The present invention can be used on a global or local computer network, on a personal computer, on viewable storage media such as a CD or DVD ROM, on a wireless telephone, on a wireless personal assistant such as a Palm Pilot®, or on any type of wired or wireless device that enables digitally stored information to be viewed. Also, information displayed and viewed using the present invention can be printed, stored to other storage medium, and electronically mailed to third parties.

Numerous modifications to and alternative embodiments of the present invention will be apparent to those skilled to the art in view of the foregoing description. Accordingly, this description is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the best mode of carrying out the invention. Details of the structure may be varied substantially without departing from the spirit of the invention and the exclusive use of all modifications which come within the scope of the appended claims is reserved.